

## Chapter 3 GD&S Organizational Issues

### 3-1. Organizational Model for GD&S Usage Within USACE

This chapter describes an organizational model for GD&S usage within USACE and can be used as a guide in determining the level of GD&S functionality and responsibility that is appropriate for each Command. The exchange of geospatial products and information is to be accomplished among all USACE Commands using the Internet.

*a. Districts.* The Districts are to have fully functional geospatial data systems to meet project needs and mission requirements. This includes the GD&S necessary for data collection and database creation, geospatial analysis, and product generation. Data collected, acquired, or created at the District is to be documented (metadata) and maintained at the District unless it is developed for and delivered to a customer. The District shall make the metadata for in-house data sets available to the National Geospatial Data Clearinghouse, where appropriate. An agreement should be reached with a customer, prior to beginning a project, as to who is responsible for providing the metadata to the Clearinghouse.

GD&S activities will normally be distributed across the various functions in the District. Each function -- Planning, Real Estate, Operations, etc. -- will operate a GDS that meets their particular requirements. Centralized oversight and technical committees will provide the structure necessary to eliminate redundant data acquisition and improve efficiency by providing guidance on training and hardware and software purchases and through the sharing of experiences and expertise.

*b. Divisions.* The Divisions typically require less geospatial data system functionality than the Districts. The functionality required is that which will allow Division staff to view, using commercially available tools such as ArcView, geospatial data products created by the Districts so they can make management decisions, conduct executive briefings, maintain an overview of the Division activity, and coordinate GD&S activities within the Division. The Division shall make the metadata for any in-house data sets available to either the National Geospatial Data Clearinghouse where appropriate.

*c. Research and Development Laboratories.* The Research and Development (R&D) Laboratories require complete geospatial data systems functionality to meet their

research and customer needs. The R&D Laboratories need to be able to advise the field on GD&S technologies, provide project support where project GD&S environments vary, evaluate new GD&S technologies, and develop algorithms and designs for systems to be fielded. The choice of GD&S must be kept flexible in the R&D Laboratory environment. Data collected, acquired, or created at the Laboratory is to be documented and maintained at the Laboratory unless it is delivered to another USACE Command or customer. The Laboratory shall make the metadata for in-house data sets available to the National Geospatial Data Clearinghouse, where appropriate. An agreement should be reached with a customer, prior to beginning the project, as to who is responsible for providing the metadata to the Clearinghouse.

*d. Headquarters.* Headquarters typically requires less geospatial data system functionality than the Districts, Divisions, or Laboratories. The functionality required is that which will allow HQUSACE staff to view, using a commercially available tool such as ArcView or VistaMap, geospatial data products created by the field so they can make management decisions, conduct executive briefings, maintain an overview of and coordinate USACE GD&S activity.

### 3-2. Location of GD&S Within a Command

The location of GD&S within a USACE Command is a determination to be made at the Command level. The considerations are: (1) the current and future GDS functionality and data requirements, (2) the sources of support and funding within the Command, and (3) the location of GD&S expertise within the Command. In most cases, a close linkage to the individual divisions will be preferable because geospatial data exploitation is just one of many enabling technologies supporting the Command missions. The establishment of the oversight and technical committees and informal users groups will aid divisions that are acquiring GD&S technology for the first time by providing expertise and experience.

### 3-3. HQUSACE Geospatial Data and Systems Manager

The Chief, Engineering Division, Directorate of Civil Works, HQUSACE (CECW-E) will serve as the USACE GD&S Manager and will represent Civil Works on the Tri-Service CADD/GIS Technology Center Executive Steering Group and will represent DoD facilities, civil works, and environmental interests on the FGDC.

### 3-4. HQUSACE Geospatial Data and Systems Coordination Committee

The HQUSACE GD&S Coordination Committee is chaired

by CECW-EP-S, composed of HQUSACE personnel who play a role in GD&S, and addresses GD&S issues from a corporate perspective. Each participating HQUSACE Directorate, such as Information Management, Real Estate, Civil Works, Military Programs, and Research and Development, will nominate a member to this committee. The Coordination Committee will meet at least twice per year. The chair will support the USACE GD&S Manager, will grant waivers of compliance for ER 1110-1-8156, will review information copies of Command GD&S implementation plans and evaluation reports, and will consider funding GD&S Field Advisory Group recommendations and other corporate GD&S activities.

### **3-5. USACE Geospatial Data and Systems Field Advisory Group**

The USACE Geospatial Data and Systems (GD&S) Field Advisory Group assists HQUSACE in defining the role of the Corps of Engineers in the National Spatial Data Infrastructure and also recommends implementations of geospatial data standards and related technologies within USACE. The GD&S Field Advisory Group is composed of approximately one representative from a District in each Division and one from each USACE R&D Laboratory. The members are selected by CECW-EP-S based on their expertise in GD&S technologies and applications. They usually meet twice per year and they elect the chair.

### **3-6. USACE Commanders.**

Commanders have two actions per ER 1110-1-8156. They will appoint a GD&S Point of Contact (POC) to act as a liaison between the command and HQUSACE/CECW-EP-S. Beginning with the FY97 Civil Works budget cycle, USACE Commanders will certify that their Command has accessed the Clearinghouse, contributed metadata to the Clearinghouse, determined via the Clearinghouse that needed geospatial data are not available from an existing source, and that possible data collection partnerships have been explored. This certification, included as Appendix B in ER 1110-1-8156, will be submitted to USACE annually as part of the Civil Works Budget submittal.

### **3-7. Geospatial Data and Systems Oversight Committee**

The Geospatial Data and Systems (GD&S) Oversight Committee is a requirement of ER 1110-1-8156. The purpose of this committee is to promote interoperability among the various GD&S efforts within the USACE Command from a corporate or administrative perspective and to approve the plans and procedures drafted by the GD&S Technical Committee for complying with this manual and ER 1110-1-8156. The oversight committee will address funding, administrative, and policy issues in

coordination with the commander and executive board as necessary.

The GD&S Oversight Committee consists of the chief, or a designated representative, of any division or office within the USACE Command that has an interest in geospatial data. This includes, but is not limited to, those working in the areas of planning, environmental analysis, project management, aerial photography and remote sensing, information management, waste water control, water quality analysis, emergency management, engineering design, facility management, real estate, regulatory functions, geotechnical analysis, hydrographic and land surveying, terrain analysis, economic analysis, and forestry. The final composition of the Committee, including the chair, is defined by the Command. Meeting schedules and procedures are to be developed by the Command. However, they should meet at least twice a year and as necessary to react to actions of the GD&S Technical Committee. If a Command has a pre-established group that performs functions similar to or a superset of the Oversight Committee, it may choose to continue with that group as long as the functions described in this EM and ER 1110-1-8156 are performed effectively.

The responsibilities of the GD&S Oversight Committee are:

- ˘ Review and approve the GD&S Implementation Plan (IP) developed by the GD&S Technical Committee
- ˘ Forward an information copy of the initial or base IP to HQUSACE, as well as subsequent IP revisions which are created at least every three years.
- ˘ Review the GD&S Performance Evaluation submitted annually by the GD&S Technical Committee. Forward an information copy of the Evaluation to HQUSACE/CECW-EP-S.
- ˘ Ensure that the Command documents new geospatial data (data created after January 1995) using the FGDC Content Standard for Digital Geospatial Metadata.
- ˘ Ensure that the Command documents existing (pre-January 1995) geospatial data to the extent practicable.
- ˘ Ensure that the Command submits metadata to the Clearinghouse.
- ˘ Ensure that the Command Utilizes the Clearinghouse prior to spending Federal funds on data collection or creation, to determine if the required data already exists.
- ˘ Ensure that the Command provides public access to geospatial data.

### 3-8. Geospatial Data and Systems Technical Committee

a. The Geospatial Data and Systems (GD&S) Technical Committee is a requirement of ER 1110-1-8156. The purpose of the GD&S Technical Committee is to promote interoperability among the various GD&S efforts within the USACE Command from a technical perspective and to ensure adherence to this manual and ER 1110-1-8156, also from a technical perspective. If a Command has a pre-established group that performs functions similar to or a superset of the Technical Committee, it may choose to continue with that group as long as the functions described in this EM and ER 1110-1-8156 are performed effectively.

b. The GD&S Technical Committee is comprised of members selected from all persons responsible for geospatial data management and other interested persons in the USACE Command. This includes, but is not limited to, those working in the areas of planning, environmental analysis, project management, aerial photography and remote sensing, information management, waste water control, water quality analysis, emergency management, engineering design, facility management, real estate, regulatory functions, geotechnical analysis, hydrographic and land surveying, terrain analysis, economic analysis, and forestry. The final composition of the Committee, including the chair, is defined by the Command. The meetings should be held in an open forum with a published agenda. An invitation for all interested parties to attend the meetings of the Technical Committee is encouraged.

c. The GD&S Technical Committee shall meet at least four (4) times per year to discuss GD&S activities within the USACE Command. The Committee shall keep everyone in the Command, including personnel at the field offices, informed of the GD&S efforts in the Command. It is recommended that the chair of the Technical Committee be rotated annually.

d. The responsibilities of the GD&S Technical Committee are:

- ◊ Prepare the initial GD&S Implementation Plan and forward it to the GD&S Oversight Committee for approval.
- ◊ Evaluate the execution of the GD&S Implementation Plan annually to determine if the execution is on schedule and moving in the direction set by the GD&S Implementation Plan. Forward this evaluation to the GD&S Oversight Committee.
- ◊ Review the GD&S Implementation Plan itself every three years, revise it as necessary and forward it to

the GD&S Oversight Committee for review and approval.

- ◊ Ensure that the Command documents new geospatial data (data created after January 1995) using the FGDC Content Standard for Digital Geospatial Metadata.
- ◊ Ensure that the Command documents existing (pre-January 1995) geospatial data to the extent practicable.
- ◊ Ensure that the Command submits metadata to the Clearinghouse.
- ◊ Ensure that the Command Utilizes the Clearinghouse prior to spending Federal funds on data collection or creation, to determine if the required data already exists.
- ◊ Ensure that the Command provides public access to geospatial data.
- ◊ Establish priorities for and coordinate data acquisition and development within the organization.
- ◊ Appoint representatives, where appropriate to the organization's mission, to coordinate with local, state, and National GD&S Technical Committees and Task Forces.

### 3-9. Geospatial Data and Systems Point of Contact

The GD&S Point of Contact (POC) is a requirement of ER 1110-1-8156. Each USACE Commander shall appoint an individual to act as the GD&S POC. The selection of the GD&S POC is an internal organizational decision. The GD&S POC may be drawn from any area of geospatial data expertise including, but not limited to, GIS, remote sensing, surveying and cartography, or CADD. The GD&S POC has the responsibility to disseminate relevant information to all members of the Command's geospatial data community, including field offices and will be the focal point for information exchange with HQUSACE. The GD&S POC will sit on the GD&S Technical Committee and may be, but is not required to be, the chairperson. The GD&S POC will also be an advisor to the GD&S Oversight Committee.

As new data pages are developed by HQUSACE on the USACE node of the National Geospatial Data Clearinghouse GD&S POCs will review their Command's pages and provide corrections to the Webmaster. Annually, the GD&S

POC will review his Command's geospatial data pages on the USACE Clearinghouse node and forward any updates to the Webmaster.

### **3-10 GD&S Users Groups and Special Interest Groups**

The Technical Committee may choose to form one or more GD&S users groups or special interest groups. These less formal groups, comprised primarily of technical experts, have been found to be effective at addressing specific GD&S issues. Users/special interest groups may be established to address functional areas, e.g., a real estate users group; technology areas, e.g., an Internet special interest group; or standards issues, e.g., the data interchange users group. These groups should keep the GD&S Technical Committee informed of the activities and may be tasked with focused studies, as needed.

### **3-11. Management Issues**

a. Once a GD&S Implementation Plan is in place, a number of management issues will arise. A critical one is the need for upper management support. By their approval of the Implementation Plan, the GD&S Oversight Committee has provided middle management approval and support.

b. USACE Command management needs to address funding to implement the Implementation Plan. This includes funding for the initial GD&S and geospatial data and funding for operations and maintenance (O&M). These O&M costs may need to be allocated to projects or may be charged to Command overhead. Funding for GD&S implementation entails considering the life cycle and staffing costs.

c. The costs that must be considered include:

- ˘ Initial software cost for software licenses.
- ˘ Initial hardware cost.
- ˘ Modifications to existing hardware that may be caused by the introduction of new hardware.
- ˘ Modifications to existing software that may be necessary to work in the new environment.
- ˘ Network implementation or modifications.
- ˘ Furniture and site modifications.
- ˘ Hardware installation.
- ˘ Software installation.

- ˘ Integration services.
- ˘ System test.
- ˘ Training of staff in system and new procedures.
- ˘ Software test.
- ˘ Data validation.
- ˘ Supplies such as media for data and output.
- ˘ Data collection and conversion of old data sets to new formats.
- ˘ Data maintenance.
- ˘ Supplemental utility programs.
- ˘ Maintenance contracts on hardware and software.
- ˘ Future system upgrades.

There are also unique costs brought about by the requirement for a National Geospatial Data Clearinghouse. These Clearinghouse costs include:

- ˘ Internet connectivity and system administration.
- ˘ Server hardware purchase and maintenance.
- ˘ Metadata creation for new and existing data sets.
- ˘ Maintenance of inactive data sets.
- ˘ Metadata distribution.
- ˘ Responding to data requests from Clearinghouse users.

Once the implementation is underway the management of expectations will begin. Here the goal is to deliver some operational capability through a pilot project which can be used to demonstrate capabilities using an initial geospatial data base. This serves to show the capabilities in an USACE environment while delivering on a functional requirement and to achieve a first success which should solidify management support. At the same time it allows the beginning of staff training and provides a set of lessons learned for the larger implementations to follow.

### **3-12. Staffing GD&S Positions**

USACE Commands will not create new positions to support the requirements of ER 1110-1-8156. However, as GD&S

technology advances within the organization and becomes an integral part of conducting the mission, GD&S skills will become part of many job descriptions. This section provides some guidance on GD&S staffing.

Currently there are no formal GD&S titles in the Federal Civil Service; however, it is not uncommon to include specific GD&S skills in position descriptions or even to use informal titles, such as GIS Specialist, in job announcements. There have been attempts to develop them in the past with no success and there is unlikely to be success in the current environment which emphasizes general categories to promote staffing flexibility. A logical set of titles, grades and responsibilities is listed in Table 3-1. Representative paragraphs that may be adapted and inserted into job descriptions for GD&S-related positions are provided in sections 10.a-10.c of this manual.

*a. GD&S Supervisory Position Skills.* Oversees the development and use of the GDS to support the planning, design, operation and maintenance efforts of the USACE Command. Based on professional knowledge of the needs of the Command and an in-depth knowledge of the use and application of the GDS, advises and assists the Command management and GD&S committees, engineering and associated staff in the Command as to the uses of the GDS in the various Command activities.

(1) Monitors GDS function to determine problems and solutions. Keeps up-to-date on software and hardware availability and changes. Applies in-depth knowledge of the hardware and software to determine specific uses of the system and to establish procedures and policies for usage. Examines new applications software and hardware developments and assesses their use and cost effectiveness; initiates actions to purchase, when appropriate. Analyzes work for which software does not exist or where programs do not meet local needs, and determines feasibility of preparing local applications.

(2) Establishes procedures for use of equipment and software and updates as changes occur or as needed to correct problems. Recommends specific actions, policies, and procedures for supervisory/management review, approval and implementation. Maintains liaison with Command Systems Manager and advises manager on technical matters for contract actions involving GDS applications or requirements. Reviews comments on GDS applications and recommends changes in Command GDS policy.

(3) Recommends, coordinates, and schedules GDS training for Command employees. Provides specialized in-house training to GDS users. Maintains status report, software documentation, and GDS supplies.

(4) Participates in internal technical planning meetings and meetings with representatives from other USACE Commands for purposes of technical coordination. Participates in negotiation with universities and other research organizations for performance of contract work, in review of contract work, and in integration of services obtained.

*b. GD&S Analyst Skills.* Is responsible for planning and executing studies relating to the characterization of physical and cultural attributes of environments for use in USACE civil works projects and military activities/operations. Duties and responsibilities require a knowledge of and experience with GDS, computers, the geographic sciences, and digital geospatial data processing. Must be able to design and build new GDS applications using commercial software tools. Provides expert knowledge to other engineers and scientists (e.g., geologists, geographers, hydrologists, mathematicians, ecologists, and physicists) in setting up and conducting programs and projects and in the presentation of technical data. Formulates conclusions from spatial analyses to supplement that of the lead scientist.

(1) Plans and directs field studies to collect data to determine the quantitative relation between various environmental factors and components of structural and non-structural alternatives for civil works and military projects. These studies include on-site data acquisition, airborne remote sensing missions, use of conventional surveying techniques, and use of automatic sensing and recording instrumentation.

(2) Participates in the direction of office studies, negotiates with other offices (USACE Districts and Divisions, U.S. Department of Agriculture, USGS, etc.) and organizations such as universities, research institutions, and commercial concerns, for existing information or cooperative work relying on own professional skills to review, interpret, and analyze information; formulate approaches; reach conclusions; and make recommendations. Develops methods and performs studies involving the comparison of geographical regions and specific sites for the purpose of determining degrees of analogy. Designs and develops computer programs to reformat acquired data as necessary for import into host GDS. In support of these and other studies develops and applies computerized methods for best portrayal of environmental data.

(3) Performs administrative duties appropriate for the technical work described, directs the work of professional and nonprofessional employees as assigned for accomplishing the work of assigned projects. Makes assignments and instructs employees of lower grade and checks performance for quality of work and rate of performance; is responsible for knowledge and observance of all regulations applicable to the work described.

**Table 3-1**  
**Sample GD&S Responsibilities**

Title	Grade	Representative Responsibilities
GD&S Manager	GS 11-12-13	GD&S POC. Coordinates the GD&S efforts within the USACE Command. Serves as technical advisor to the Oversight Committee. Permanent member of the Technical Committee.
Geospatial Data Manager	GS 7-9-11-12	Maintains metadata and data for the Clearinghouse. Responsible for establishing and maintaining a geospatial data archive and library. Designs and constructs new databases. Provides recommendations on database issues to Technical Committee and GD&S Manager.
GD&S Spatial Analyst	GS 7-9-11-12	Uses GD&S technology to design and produce decision support products. Customizes and uses GDS tools to analyze spatial data of various types. Formulates conclusions from this analysis and recommends additional analyses to help further refine solutions.
GD&S System Operator	GS 7-9-11	Uses GD&S technology to produce decision support products. Knowledgeable of capabilities and operation of GDS. Constructs new databases. Customizes commercial GDS to perform specific applications. Oversees activities of GD&S Technician.
GD&S Technician	GS 5-7-9	Knowledgeable in the operation of GDS products. Operates peripheral devices to build and maintain geospatial databases.

c. *GD&S Operator Skills.* Is responsible for assisting in the planning and executing studies relating to the characterization of physical and cultural attributes of environments for use in USACE civil works projects and military activities/operations. Duties and responsibilities require a knowledge of and experience with GDS, computers, and digital data processing to acquire, store, retrieve, and display data in a form best suited to the user's needs. Must be able to design and build new GDS applications using commercial and custom software tools. Works cooperatively with other engineers and scientists (e.g., geologists, geographers, hydrologists, mathematicians, ecologists, and physicists) in setting up and conducting programs and projects.

(1) Plans field studies to collect data to determine the quantitative relation between various environmental factors and components of structural and nonstructural alternatives for civil works and military projects. These studies include on-site data acquisition, airborne remote sensing missions, use of conventional surveying/ techniques, and use of automatic sensing and recording instrumentation.

(2) Participates in the direction of office studies, negotiates with other offices (USACE Districts and Divisions, Natural Resources Conservation Service, U.S. Department of Agriculture, U.S. Geological Survey, etc.) and organizations such as universities, research institutions, and commercial concerns, for existing information or cooperative work relying on own professional skills to review, interpret, and analyze information; formulate approaches; reach conclusions; and make recommendations. Develops methods and performs studies involving the comparison of

geographical regions and specific sites for the purpose of determining degrees of analogy. Designs and develops computer programs to reformat acquired data as necessary for import into host GDS. In support of these and other studies develops and applies computerized methods for best portrayal of environmental data.

(3) Performs administrative duties appropriate for the technical work described, directs the work of professional and nonprofessional employees as assigned for accomplishing the work of assigned projects. Makes assignments and instructs employees of lower grade and checks performance for quality of work and rate of performance; is responsible for knowledge and observance of all regulations applicable to the work described.

d. *GD&S Technician Skills.* Is responsible for assisting in the conduct of studies relating to the characterization of physical and cultural attributes of environments for use in USACE civil works projects and military activities/operations. Duties and responsibilities require a knowledge of and experience with GDS, computers, and digital data processing to acquire, store, retrieve, and display data in a form best suited to the user's needs. Works cooperatively with other engineers and scientists (e.g., geologists, geographers, hydrologists, mathematicians, ecologists, and physicists) in conducting programs and projects and in the interpretation, analysis and presentation of technical data.

(1) Participates in GD&S studies within the USACE Command. Assists in the interpretation and analysis of information; helps to formulate approaches and reach

conclusions; and makes recommendations. Helps to develop methods for performing studies involving the comparison of geographical regions and specific sites for the purpose of determining degrees of analogy. Writes computer programs to reformat acquired data as necessary for import into host GDS. In support of these and other studies, applies computerized methods for best portrayal of geographic data.

(2) Operates a GDS. Builds geospatial databases to specification by using a GDS application to enter coordinates and attribute data, operating a scanner, or other computerized method. Recommends improvements to the data entry system.

### 3-13. Training GD&S Staff

Required training in the GD&S area of expertise has not yet been formalized. The field is still evolving and academic studies have shown that curricula vary greatly. In general, the requirement is training in a field with a spatial component (e.g., geography, cartography, remote sensing, civil engineering, biology, oceanography, urban and regional planning, agronomy, forestry, landscape architecture, or geology) and course work in GD&S topics. In the present environment the progression is like the apprentice, journeyman, master sequence in the crafts.

### 3-14. Training Sources

There are a number of sources for GD&S training which make entry into the area and continuing education readily available.

*a. USACE Training.* The Training Symposium on Surveying, Mapping, Remote Sensing and Geographic Information Systems is sponsored by Headquarters USACE to transfer new technology developments to USACE users. This symposium is held every three years and provides short courses, plenary sessions and technical sessions. Exhibits of commercial and USACE capabilities are provided. Announcement of the symposium is made by a memorandum from HQUSACE (CECW-EP).

The Proponent Sponsored Engineer Corps Training (PROSPECT) Program courses are developed to meet unique USACE training needs. They are taught by USACE employees or by contractors and some provide continuing education credits. Of particular interest is a course entitled "GIS Introduction." The POC for PROSPECT courses is:

Commander  
U.S. Army Engineering Support Center, Huntsville  
ATTN: CEHNC-TD-RG (Registrar)  
P.O. Box 1600  
Huntsville, AL 35807-4301

GRASS Conferences and Courses provide instruction on the operation of the GRASS GIS developed by the Construction Engineering Research Laboratory. The POC for GRASS Conferences and Courses is:

Center for Remote Sensing and Spatial Analysis  
P.O. Box 231  
College Farm Road  
Cook College  
Rutgers University  
New Brunswick, New Jersey 08903  
coneil@ocean.rutgers.edu

*b. Other DoD Training.* The Defense Mapping School at Fort Belvoir, Virginia has several courses related to GD&S technologies including database production, remotely sensed imagery, GIS, cartography, and an introductory ARC/INFO course under development. The POC for the Defense Mapping School is:

Director  
Defense Mapping School  
ATTN: HR-DMSO  
Fort Belvoir, VA 22060-5828

Training is also available through the Tri-Service CADD/GIS Technology Center and the CAD2 Contract. The POC is:

Tri-Service CADD-GIS Technology Center  
U.S. Army Engineer Waterways Experiment Station  
ATTN: CEWES-ID-C  
Vicksburg, MS 39180-6199  
601-634-2945

*c. Universities.* Hundreds of universities are now offering GDS programs usually integrated with a well established academic department such as geography, geology, forestry, civil engineering, or agronomy. Many universities also offer GD&S short courses. A listing is available in *Directory of Academic Departments Offering GIS Courses* published by The American Society for Photogrammetry and Remote Sensing (ASPRS) and the American Congress on Surveying and Mapping (ACSM).

*d. Vendors.* Vendors provide training in the operation of hardware and software as opposed to universities that emphasize concepts and applications to problems. This training may be acquired as part of a GDS procurement or through user groups and workshops.

*e. Professional Meetings, Conferences and Symposia.* Many professional organizations conduct technical meetings and offer workshops and training in GD&S technology arena. A few are listed below:

**1 Aug 96**

The American Congress on Surveying and Mapping (ACSM), Suite 100, 5410 Grosvenor Lane, Bethesda, MD 20814-2122

The American Society for Photogrammetry and Remote Sensing (ASPRS), Suite 210, 5410 Grosvenor Lane, Bethesda, MD 20814-2160

Automated Mapping/Facilities Management International (AM/FM), 14456 East Evans Avenue, Aurora, CO 80014-1409

The Association of American Geographers (AAG), 1710 Sixteenth Street, NW, Washington, DC 20009-3198

The Urban and Regional Information Systems Association (URISA), Suite 304, 900 Second Street, NE, Washington, DC 20002

The five professional organizations listed above jointly sponsor an annual meeting known as GIS/LIS. This large national meeting is designed to be an interdisciplinary educational and scientific meeting which promotes interaction among individuals and groups interested in the design and use of GIS, LIS, and related specialties and technologies. GIS/LIS workshops are taught at introductory and advanced levels and address a range of technical and managerial topics. Exhibits provide a chance to interact with vendors and learn about product enhancements and revisions and make near-direct comparisons among different products and thus save considerable time and effort if you are shopping for software, hardware, or services.

There are also Federal Government and State Government conferences which are dedicated to GIS such as the Federal Geographic Technology Conference, Exposition, and DataMart, the National Geodata Policy Forum, and the National GIS Council (NSGIC) Annual Meeting